Can Antenatal Care Result in Significant Maternal Mortality Reduction in Developing Countries?

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Abstract

Antenatal screening can only be important as a maternal mortality reduction tool if the main causes of maternal mortality have detectable premorbid states for which there are efficacious and acceptable remedial interventions. Out of the seven major contributors to maternal mortality in developing countries, only malaria, HIV and pre-eclampsia/eclampsia meet the above screening criteria.

Antenatal care services will not identify most women who will develop postpartum hemorrhage, sepsis, obstructed labor and complications of abortion. In countries with low prevalence for HIV and malaria the potential contribution of antenatal screening to maternal mortality reduction is severely limited.

Antenatal care services contribute immensely to newborn survival; it is for this reason that they must be strengthened. Maternal mortality reduction strategies must include universal access to family planning, skilled attendance at birth and emergency obstetric care services.

Keywords: Antenatal care; Screening; Maternal mortality; Malaria; HIV

Introduction

The importance of antenatal care for maternal health lies in its capacity for detection of preclinical or early morbid states in expectant mothers and the opportunity for health promotion that it permits. In many developing countries health promotion in antenatal clinics is limited to passive reception of a health talk and more passive communications through wall posters. The impact of this kind of intervention on health outcomes is at best limited. This commentary will focus on the potential of antenatal screening as a significant contributor to maternal mortality reduction in developing countries.

A commentary on the potential impact of antenatal care services as a strategy for maternal mortality reduction warrants revisiting because in recent discussions with new generations of maternal health providers in Africa and South Asia, an exaggerated role is placed on antenatal care services to reduce the burden of maternal mortality in their countries. By the 1990s there was consensus that, at best, antenatal care services could only contribute minimally to the reduction of maternal mortality in developing countries [1-3]. I suspect that training curricula in many countries have not reflected this consensus.

Screening and the major causes of maternal mortality

Even though what constitutes antenatal care differs from country to country the basic premise is the same: that detectable pre-morbidity or early morbidity for which there are acceptable remedial or curative interventions could be found in apparently healthy pregnant women [4]. On a population health level, antenatal screening programs will only achieve significant success if there is a high prevalence for these detectable premorbid states.

The main causes of maternal mortality are well known and ubiquitous in developing countries: hemorrhage (antepartum and postpartum), sepsis, pre-eclampsia/eclampsia, obstructed labor and complications of induced abortions [3-6]. In tropical countries malaria causes significant maternal morbidity and mortality, and in some southern African countries HIV in pregnancy contributes significantly to maternal morbidity and mortality [5,6].

The success of an antenatal screening program will depend on the presence of a detectable premorbid state in these seven conditions and the presence of acceptable, efficacious and effective interventions [4,7]. Even though acceptability and effectiveness of interventions may be culture and context dependent, there is no doubt that there are proven interventions for managing these conditions. Western countries have used these therapies for decades to much success. Perhaps the greatest disparity between women in sub-Saharan Africa and Western women is not in the differences in the incidence of maternal complications but in the access to care when complications develop.

In most developing countries severe blood loss or hemorrhage is often the leading cause of maternal mortality [5,6]. Hemorrhage could be antepartum (before onset of labor) or postpartum (in practice it includes bleeding during labor and afterwards). By far, postpartum hemorrhage (PPH) contributes more to maternal mortality than antepartum hemorrhage. Unfortunately, there is no detectable state or algorithm that can help to identify women who will develop PPH in antenatal clinics. Pre-pregnancy anemia limits the compensatory capacity of women when blood loss occurs but anemia is not one of the seven leading causes of maternal mortality.

Puerperal or post-abortal sepsis develops in the hours, days and weeks after delivery or abortion. Once again there is no potential for detecting women who will develop puerperal sepsis when they attend antenatal care services.

Pre-eclampsia/eclampsia, more technically called toxemia of pregnancy, is characterized by high blood pressure, proteinuria and edema. It is notable that blood pressure monitoring, urine tests for

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Received January 22, 2013; Accepted March 06, 2013; Published March 11, 2013


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proteinuria, weight monitoring for excessive weight gain and physical examination for edema are all components of typical antenatal care programs. Unfortunately not all toxemias occur in the antenatal period; some occur in the intrapartum and postpartum periods. Another problem with early detection of toxemia is that the course of the condition is unpredictable. Some cases maintain a very high blood pressure but do not progress to toxemia; others develop toxemia with moderately elevated blood pressures. There is no widely accepted metric for predicting the course of the disease. The effect is needless treatment of those for whom there will be no progression to eclampsia. Nevertheless, toxemia of pregnancy has a detectable phase, there are cheap and acceptable interventions, and the incidence of toxemia is high enough to make antenatal screening successful for the reduction of mortality due to toxemia of pregnancy.

In many health management information systems (HMIS) obstructed labor is an omnibus term for all situations in which labor is not progressing as swiftly as expected with or without an identifiable obstruction. On patient clinical records it includes terms such as “cephalopelvic disproportion”, “delayed second stage”, “shoulder dystocia”, “face presentation”, “hand prolapse” and many other forms of malpresentation. There are a few cases of cephalopelvic disproportion that could be diagnosed in the antenatal period and elective cesarean deliveries or other interventions could be done. But only a few of the conditions grouped together under obstructed labor have detectable antenatal phases and even fewer had acceptable antenatal interventions. Here again, antenatal screening is not likely to have significant impact on maternal mortality reduction.

Induced abortions do not contribute significantly to maternal morbidity and mortality in countries where abortion is legal and can be performed under safe conditions by competent providers. In countries where illicit abortions are common it contributes significantly to maternal mortality. The antenatal clinic does not typically see those who seek to terminate their pregnancies so cannot directly reduce maternal morbidity. Nevertheless, antenatal clinics could provide counseling on post-delivery contraceptive options to reduce the number of women with unwanted pregnancies.

Malaria and HIV are communicable diseases that can be detected in and managed in the antenatal period. In malaria endemic areas and countries with high HIV prevalence antenatal screening for these conditions has a high potential for the reduction of maternal mortality.

**Conclusion**

In conclusion, the impact of antenatal screening in developing countries on the reduction maternal mortality will depend on how well they screen for and manage pre-eclampsia/eclampsia, malaria and HIV; the three main causes of maternal mortality with detectable preclinical phases. In other words, antenatal care services in developing countries can have only limited impact on reducing maternal mortality because most of the major causes of maternal mortality do not have detectable preclinical phases. Antenatal screening will have even less impact in low HIV and low malaria prevalence countries or in countries with high HIV or Malaria prevalence but in which antenatal care services are not geared towards early detection and prompt management of these conditions.

The top three priorities for the reduction of maternal mortality ought to be universal access to family planning services, skilled attendance at every birth and prompt access to emergency obstetric care when the need arises. Antenatal care services contribute immensely to newborn survival; it is for this reason that they must be strengthened. Access to antenatal care services will contribute in a little way but will not yield significant reductions in maternal mortality.

**References**